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Native Plants and Me: Right in My Own Backyard

By Jim Fuehrmeyer

I grew up like a lot of folks – cut the grass with a push mower, dug up dandelions (*Taraxacum officinale*) with an old knife. When I got old enough to have my own home, I graduated to a power lawnmower, used Turf Builder, and sprayed my roses with a systemic insecticide so there would be no holes in the leaves. The perfect yard.

J. Fuehrmeyer

Golden groundsel began as three plugs purchased five years ago; they have thrived!

Twenty years ago, I moved to South Bend and built a house in what was once known as Doc Foley's woods. At that time the back portion of the lot was trees with abundant undergrowth. I hired a tree service that cleaned out everything but trees that were more than about 8 inches in diameter. Thankfully the trees that remained were quality hardwood species – white oak (*Quercus alba*), black oak (*Q. velutina*), pignut hickory (*Carya glabra*), sassafras (*Sassafras albidum*), black cherry (*Prunus serotina*), American beech (*Fagus grandifolia*), and black walnut (*Juglans nigra*).

Like everyone else in the neighborhood, the ground was mulched and the newly installed plants were all non-native — hostas (*Hosta* spp.), burning bush (*Euonymus alatus*), azalea and rhododendron (*Rhododendron* spp.), knockout rose (*Rosa* cultivar), porcelain berry (*Ampelopsis* sp.), Japanese barberry (*Berberis thunbergii*), and English holly (*Ilex aquifolium*). I know, forgive me! I also planted a few trees, some good, some not – ornamentals such as Japanese weeping cherry (*Prunus* × *subhirtella* 'Pendula'). The north border of the property included a "wild area" consisting almost entirely of invasives such as Amur honeysuckle (*Lonicera maackii*) and garlic mustard (*Alliaria petiolata*).

Since I had bird feeders and enjoyed birds, I got serious about birding after I retired eight years ago. I soon joined the South Bend-Elkhart Audubon chapter (now the Bird Alliance) and began volunteering at their sanctuary. My first time out, I was assigned to help pull garlic mustard. It was then that I first learned that there were such things as invasive plants. It was also there that I met Jan Hunter of Naturally Native Nursery and learned that there were such things as native plants.

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I began converting my yard six years ago. Task one was removing invasives. I dug up the burning bush and porcelain berry, pulled garlic mustard and winter creeper (*Euonymus fortunei*), and killed Amur honeysuckle, including those in the "wild area" whose branches reached over the lot line. I reclaimed planting areas year by year, pulling out knockout roses and hostas, taking out sections of lawn, and then planting native plants – aster (*Symphyotrichum* sp.), goldenrod (*Solidago* sp.), milkweed (*Asclepias* sp.), golden groundsel (*Packera aurea*), ferns, and sedges (*Carex* spp.). This year I took out the non-native trees (two crabs and a cherry) and planted redbud (*Cercis*

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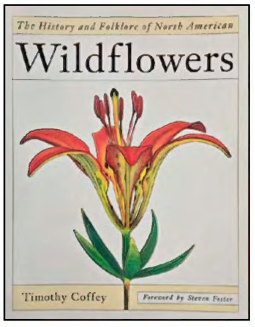
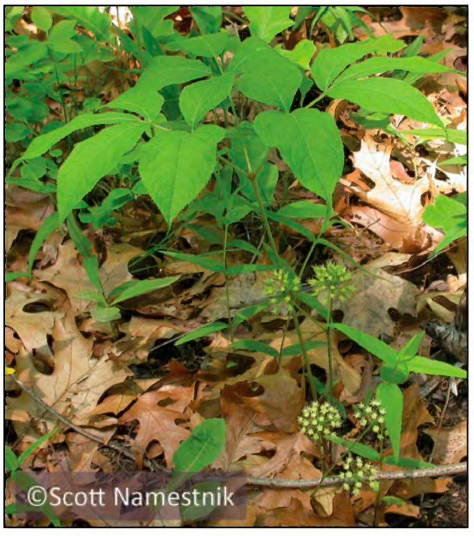
The Stories Behind the Remedies

By Mark Sheehan



Botanists encountering a plant that is new to them usually try to determine its name (common name, scientific name) and to place it in the context of its relatives (family, etc.) using the sciences of systematics and taxonomy. In many cases they will want to dig a little deeper to find out the plant's role in its environment and its value (or usefulness) to humans. The science of ecology helps flesh out a plant's role among the other organisms in its environment. The science of ethnobotany helps complete the picture by considering the uses to which humans put the plant.

I had the good fortune of studying ethnobotany in 1972 with the late Dr. Charles B. Heiser, then of the Indiana University Department of Botany. His appreciation for the web of interactions between plants and humans was infectious and I still often turn to the textbook he had his students buy, *Plants for Man* (Schery 1972). That book succeeded brilliantly in detailing plant uses in the worldwide commerce of its time, but the broad scope of the book kept the author from detailing many of the household uses of plants. For example, while 200 of the book's more than 600 pages are devoted to food plants, only 20 deal with medicinal plants.



*Sarsaparilla (*Aralia nudicaulis*), most common in woods near Lake Michigan, has aromatic roots suitable for tea and root beer.*

For more information about medicinal uses, in particular, the curious botanist usually turns to an "herbal," a book that tells how specific plants are used to achieve specific goals – medicinal, nutritional, and others. Over the years I have accumulated a small collection of herbals. Unhappily, most of them deal with European or Eurasian plant species, leaving out most of the species I find growing wild in southern Indiana.

Indiana native plants are more likely to be included in Native American herbals, many of which have been published in the past 30 years. These books typically include some non-native plants as well, but I find their general focus on natives satisfying. If your interests are like mine, the following website may interest you: 10 Best Native American Herbal Medicine Books In 2026 (https://foodnourish.net/best-native-american-herbal-medicine-books/). It covers books published from 1992 to the present.

In researching another article for this journal, I ran across a book that bridges many of the gaps I've found in the popular ethnobotany literature. Readers might be interested in Timothy Coffey's *The History and Folklore of North American Wildflowers* (1993). For some 700 species of plants, mostly North American natives, the book provides an engagingly told history of the plants' uses by humans. In writing the book, Coffey researched the work of nearly 300 authors ranging from Pliny the Elder (23-79 CE) through James Whitcomb Riley and Henry David Thoreau to the 20th century's Joseph Wood Krutch who in his own *Herbal* (1976) compiled the work of 25 herbalists and plant enthusiasts.

In addition to its 21-page bibliography and the customary index of plant families, genera, and common names, the Coffey book includes an index to the authors cited in the book (Thoreau, for example, is cited 58 times; John Gerard, an eminent 17th century gardener, takes the prize with 112 citations). If you want to dive deep, here is a promising pool!

But I know: These days it's almost embarrassing to refer to print media. Electronic versions of reference materials like field guides and herbals are available online and, among other inputs, are being used to train artificial intelligence (AI) models to reason with us in ways no field guide ever could. Still, the world of printed, peer-reviewed books with its carefully curated information, remains a valued source of insight into native plants. For example, recently I was researching the ginseng family (Araliaceae) using Google in its AI mode. I wanted information on that family's use in making the beverage, sarsaparilla. I had to manually steer Google AI away from the plants also called sarsaparilla that belong to the greenbrier family (Smilacaceae). Later, conducting the same search in the Coffey book reviewed here, I immediately found the information I needed. (To be fair, Google's AI proves much more helpful when I work at stating the context of my question clearly.)

The History and Folklore of North American Wildflowers is no longer in print but used and sometimes even new copies can be found at online booksellers such as Amazon, AbeBooks, and Alibris. An online edition can be used at no charge through the Internet Archive, *https://archive.org/embed/historyfolkloreo00coff_0* (signup required).

If you have a taste for ethnobotany but find unreferenced folklore unsatisfying, the Coffey book might merit a place in your personal library.

References

Coffey, T. 1993. The History and Folklore of North American Wildflowers, Houghton Mifflin Company, Boston and New York.
Krutch, J.W. 1976. Herbal, David R. Godine, Boston, MA.
Schery, R.W. 1972. Plants for Man (2nd edition), Prentice Hall Inc., Englewood Cliffs, NJ.

Mark Sheehan, a member of the South Central Chapter of INPS, teaches a course on plants and plant communities at Indiana University.

Backyard — *continued from front page*

canadensis). But that hasn't been the biggest transformation.

The most surprising thing occurred after I removed the invasives and the exotics. Native plant seeds, dormant in the seed bank or brought in by birds, began to germinate. Other species may have laid as suppressed buds in the soil. I have had more species volunteer in my yard than I have planted, at least 18, including Jack-in-the-pulpit (*Arisaema triphyllum*), white trillium (*Trillium grandiflorum*), and smooth Solomon's-seal (*Polygonatum biflorum*). By the way, the list also includes poison ivy (*Toxicodendron radicans*), which I leave in out-of-the way places due to its wildlife value.

Because I am surrounded by other yards and "wild areas," I still spend time fighting non-native invasives – the same ones as before, plus tree-of-heaven (*Ailanthus altissima*) lately. But each year I add more native plants and take out a little more lawn.

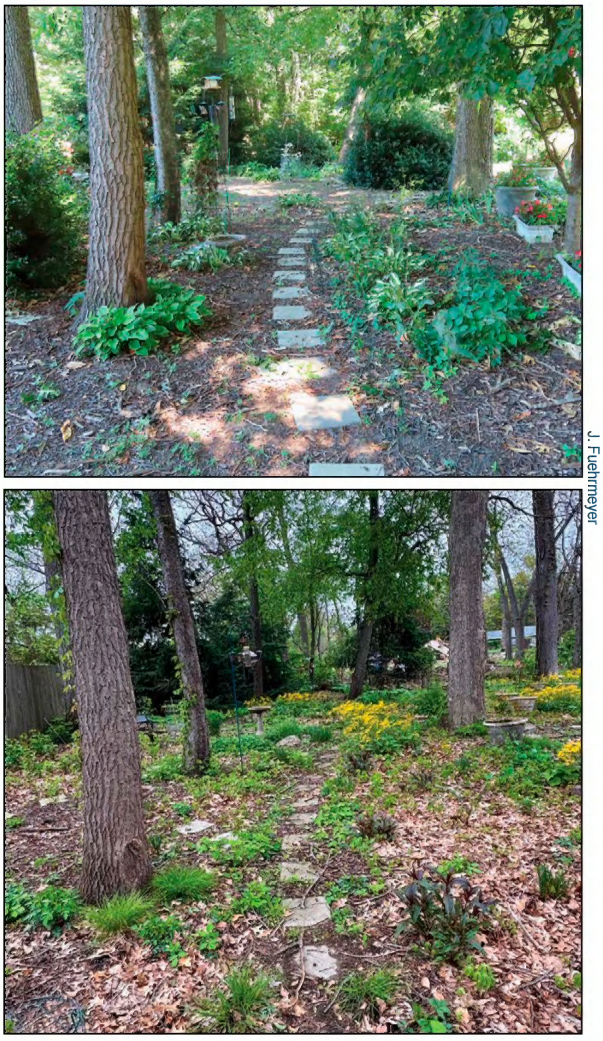
My home is in a neighborhood with an HOA, so I do still have lawn that is cared for by the HOA; however, I have been allowed to skip the lawn chemicals. In consideration of that, I dig up the dandelions by hand. The planting areas in front of and along the sides of my home are all lined with stone pavers, so they look intentional. And the vast majority of the native "messiness" is behind the house and not visible from the street.

Truely, it has been an adventure. And I love it! … and so do my birds!

Jim Fuehrmeyer is a member of the North Chapter of INPS.

Top: The Fuehrmeyer "before" landscape (from 2022) has an abundance of hosta and English holly.

*Bottom: The "after" landscape (from 2026) is now devoid of English holly as well as other exotics. Native sedges have replaced the hostas and spicebush (*Lindera benzoin*) and arrowwood (*Viburnum *sp.) have replaced the hollies.*



J. Fuehrmeyer

Public Gardens: Important Allies in Invasive Plant Early Detection

By Michelle Beloskur

Public Gardens as Sentinels against Invasive Plants (PGSIP) is a growing, North American-wide initiative. This network recognizes the unique and proactive role public gardens can play in assessing which non-native plants exhibit invasive tendencies.

Kris Bachtell, The Morton Arboretum

*PGSIP ranks Japanese tree lilac as a potentially invasive species, unlike the familiar common lilac (*Syringa vulgaris*), another non-native species.*

The escape of non-native plants from where they have been cultivated can be a sign of potential invasiveness. While many public gardens have a long history of detecting and addressing non-native plant escape, these detections have not been captured or shared in any systematic way. The PGSIP working group has created a set of guidelines and a database to enable gardens to collect standardized data on non-native collection plants they have observed escaping cultivation. Each plant reported to PGSIP is ranked according to the program guidelines as either watchlist, potentially invasive, or invasive. Rankings are based on the number of escapees, how far they have spread, and the context of their spread. For gardens conducting formal risk assessments, there is also an option to report plants that have been assessed as invasive.

As of 2026, 75 public gardens and arboreta have contributed 1,200 plant records. As a result of these contributions, the PGSIP Working Group issued three Plant Alerts of interest for Indiana – Japanese tree lilac (*Syringa reticulata*), golden rain tree (*Koelreuteria paniculata*), and Amur corktree (*Phellodendron amurense*). Amur corktree is already listed as invasive in Indiana and is regulated as a prohibited terrestrial plant. While Japanese tree lilac and golden rain tree are not currently listed as invasive in Indiana, these plants were reported by PGSIP gardens in nearby states, including Illinois, Ohio, and Wisconsin. Reports have also been made via the Early Detection and Distribution Mapping System (*EDDMapS.org*). PGSIP recommends reporting occurrences of these plants in uncultivated or natural areas. These three species were selected by the Working Group based on a variety of factors including how often these plants were reported, the regionality of the reports, and unique features that may enhance their ability to escape cultivation and spread. The goal of these alerts is to raise awareness of these species, share data about their propensity to spread, and recommend actions accordingly.

Plant Alerts are shared with public gardens, nurseries, propagators, landscape architects, and other stakeholders in a position to influence which plants are grown, sold, and ultimately introduced into the landscape. Public garden collections often have novel species, ones not yet available in the horticultural trade. Getting information about these species into the hands of stakeholders as early as possible gives them time to voluntarily move away from the propagation and use of potentially invasive plants. Plant Alerts can be downloaded from either the PGSIP website (*pgsip.mortonarb.org/Bol/pgsip*) or the Midwest Invasive Plant Network website (*mipn.org*).

For anyone wanting to learn more, the paper by Culley et al. (2026) analyzes data collected by PGSIP gardens as of November 2024. The paper lists species newly identified as spreading in gardens within different regions and notes whether they have been reported as state-listed/regulated/noxious outside of gardens. Another valuable resource is the publicly accessible PGSIP Data Dashboard (*pgsip.mortonarb.org/Bol/pgsip/data*), which showcases plants most commonly reported to PGSIP. Users can filter the results to display reports from individual states/provinces or regions. The Dashboard can assist those engaged in invasive early detection work, but it is important to note that approximately a third of the records in the PGSIP database are plants ranked by gardens as "watchlist" species, which is the lowest level of concern. In other words, not all plants recorded to the database are necessarily invasive, but they may escape cultivation and should be monitored.

The network of public gardens and arboreta that participates in PGSIP continues to grow. As

the network grows, so too does the information about the invasive risk of specific plants. For garden staff interested in joining the network, the PGSIP website includes introductory webinars. It also houses additional information including the PGSIP program guidelines and dates for upcoming workshops.

Reference

Culley, T.M., H. Landel, K. Dreisilker, M. Beloskur, B. Shultz, N. Cavalin, J. Breiner & K. Havens. 2026. Data from sentinel public gardens are useful indicators of potential plant invasion. Invasive Plant Science and Management 19:1-38. doi:10.1017/inp.2025.10035.

Michelle Beloskur is the Director of the Midwest Invasive Plant Network and Co-Director of Public Gardens as Sentinels against Invasive Plants.

PLANT ALERT
Public Gardens as Sentinels against Invasive Plants
Golden rain tree
Koelreuteria paniculata
ISSUED NOVEMBER 2025
Golden rain tree has been identified by the PGSIP working group as a plant of concern due to a growing number of botanic gardens and arboreta reporting on its ability to escape from cultivation.
Public gardens across North America are sharing their horticultural expertise to document cases of plants escaping from cultivation. The goal of this alert is to increase awareness of gardens' observations about golden rain tree's behavior within their properties and to recommend actions to reduce its capacity to spread. For more information visit the PGSIP website.
Data from PGSIP Gardens
Eleven out of 67 gardens have used the PGSIP guidelines to rank golden rain tree according to its ability to escape from cultivation. Reports have come from 9 states and provinces across 5 regions*, the most regions of any taxon reported to PGSIP, including Washington, California, New Mexico, Wisconsin, Illinois, Ohio, Kentucky, New York, and Ontario. One of the reports specifies the cultivar 'JFS-Sunleaf', ranking it a Watchlist species. Given that golden rain tree is cultivated in 97 U.S. and 7 Canadian gardens, and that escape from cultivation is being reported across such a wide geographic range, more gardens are encouraged to participate in PGSIP to further understand the extent and degree of its spread. Click on the map below to stay up to date on new reports of golden rain tree.
How Gardens Ranked Golden Rain Tree
Number and percentage of gardens that assigned each program ranking
QUICK HERE Watchlist
QUICK HERE Potentially Invasive
QUICK HERE Invasive
QUICK HERE Assessed as Invasive
Recommended Actions
PGSIP urges these next steps for propagators, nurseries, landscape architects, invasive plant councils, and public gardens.
Increase public garden monitoring and reporting
Eradicate spontaneous populations
Develop and evaluate cultivars for reduced fertility
Click map to visit the PGSIP Data Dashboard

Golden rain tree Koelreuteria paniculata
Background Information
BRIEF DESCRIPTION: 30-40' tall tree with open-branching and rounded crown. Alternate, pinnate/bipinnate, feathery, compound leaves with 7-17 irregularly lobed leaflets that emerge pinkish/bronze-purple, mature to bright green in summer, and turn yellow in fall. Showy yellow flowers in terminal panicles (12-15"). Brown, papery, three-valved seed capsules.
HARDINESS ZONES: 5-9
NATIVE RANGE: Northern China, Japan, and Korea
STATUS: Not currently regulated
MALE CULTIVARS: None
POTENTIAL IMPACTS: Outcompetes and shades out native vegetation.
Unique Features
Similar in appearance to other trees with alternately arranged, compound leaves including invasive tree-of-heaven (Ailanthus altissima), and native black walnut and sumacs. Yellow panicles of flowers and three-valved seed capsules are unique to golden rain tree.
Habitat
Prefers full sun. Tolerant of a wide range of soils as well as pollution and drought conditions. PGSIP gardens reported this plant spreading into other garden beds, managed natural areas, turfed areas, rights-of-way, and drainage areas.
Reproduction and Growth Rate
This fast growing plant spreads by seed and readily self-seeds. Its high rate of seed production and high germination rate allows this plant to spread quickly and shade out native species.
References and Links
1 - Missouri Botanical Garden
2 - Missouri Department of Conservation
3 - The Morton Arboretum
4 - North Carolina State University Extension
Royal Botanical Gardens CANADA
CHICAGO BOTANIC GARDEN

https://pgsip.mortonarb.org/BoI/pgsip/Alerts

PGSIP has issued this Plant Alert warning that golden rain tree should at least be monitored for its potentially invasive qualities.

INPS at work!

The South Central Chapter of INPS had an active spring. On April 11, Bill Daniels, (pictured at right), along with Dottie Warmbier and Bill Cowan, participated in the Garden Fair hosted at Switchyard Park in Bloomington by the Master Gardeners of Monroe County. The fair handed out seedlings of chokeberry (*Aronia* sp.). MC-IRIS, a local anti-invasives coalition, was present, along with booths featuring native plant species. INPS offered seeds, germination tips, and information about regional native species.

On the last weekend of the month, at least four INPS members (Mary Damm, Cathy Meyer, David Mow, and Mark Sheehan) led hikes as part of the 41st annual Spring Wildflower Foray of Brown and Monroe Counties.

Ellen Jacquart

Imported Insects Slow

By Sophie Hartley

Purple loosestrife (*Lythrum salicaria*), a deceitfully beautiful flower that blooms in various shades of magenta, has spread across almost two thirds of Indiana – and its footprint is still growing. The plant has colonized more than a million additional acres of wetlands in the United States, potentially turning lush and diverse habitats into bright purple monochromatic swaths.

Despite its presence across much of Indiana, the plant is not native to the state's wetland ecosystems. It was likely brought to North America from Eurasia as both a decorative plant and in the soil-packed ballasts of massive commercial ships during the 1800s. The plant was widespread across New England wetlands by the 1830s, and over the next 50 years it colonized large portions of the Midwest as it traveled inland through rivers and the Great Lakes.

In Indiana, purple loosestrife has proliferated. One plant can produce upwards of 2.5 million seeds annually. Furthermore, the prolific purple loosestrife can hybridize with native relatives, such as winged loosestrife (*Lythrum alatum*), thanks to oblivious bees and butterflies. Purple loosestrife and its hybrid offspring are both such dire threats to wetlands that state law not only prohibits the sale of purple loosestrife, but also the sale of other species in the plant's genus without a permit – even the ones native to Indiana.

Beetles on patrol

Regulating an invasive's entire genus, especially when it also accounts for flowers native to the Indiana landscape, is "unusual," said Will Drews, a nursery inspector and compliance officer in the Indiana Department of Natural Resources's entomology division.

But in this case, the careful eye is critical to keeping ecosystems safe. Hybridization between native and invasive plants in the same genus can lead to ecological disasters if native plants, that wildlife rely on for food and shelter, disappear.

"We don't want the hybrids to get out there," Drews said. Unchecked, hybrids can deplete the genetic diversity and integrity of native species, and they tend to take on the hardiest attributes of both parents and outperform either of the initial species.

Invasive hybrids (as seen with cat-tails, *Typha*) become "more problematic, more aggressive, produce more seeds, et cetera," Drew said. "That's the same thing that we worry about with purple loosestrife."

Since 1996, Hoosiers itching for a hint of purple in their gardens can't legally purchase plants in the genus *Lythrum* without a permit. Even loosestrife labeled as sterile is off limits; so-called sterile varieties have been found reproducing with purple loosestrife and creating viable seeds.

Left: Before biological control, purple loosestrife often produced monocultures of husky plants reaching to 6 feet tall.

Middle: Because of the showy inflorescences and nectar, the species historically found garden use. Unfortunately even so-called sterile varieties may generate seed.

Right: Leaf-feeding beetles have left holes and eggs on this plant in a Steuben County wetland.

P. Rothrock

an Invasive Flower

Luckily for land managers, there are a few methods of dealing with purple loosestrife and hybrid infestations.

"Unlike a lot of invasive species where we're kind of limited on control methods, often with just manual and chemical control, we do actually have a biological control agent for purple loosestrife," Drews said.

This agent is the purple loosestrife beetle, a term that refers to a few different beetle species imported into the United States from the invasive plant's native range.

In Eurasia, purple loosestrife beetles feed on their namesake plant, keeping populations controlled and scattered. American researchers tested the beetles' appetites against about 50 plants native to North America. When the beetles added only the native winged loosestrife to their diet, scientists were confident that releasing the bugs would put a dent in the purple loosestrife population.

Starting in 1992, the insects have been introduced in more than 15 states and Canada, including Indiana. In 1999, one year after the DNR released the beetles nearby, biologists counted a dramatic decrease in purple loosestrife at sites like Pleasant Lake in Steuben County.

"It doesn't kill the plant but it reduces its ability to produce viable seed which will decrease the amount of spread," Drews said, adding, "Which is cool!"

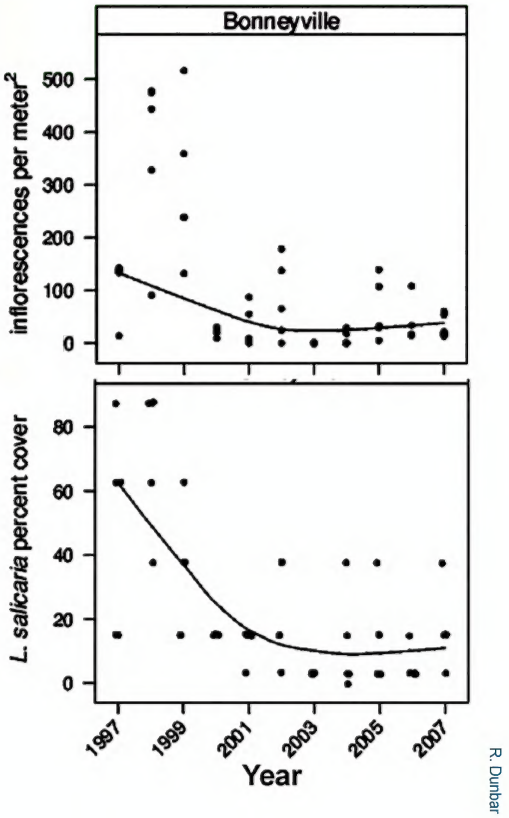
To learn more about removing invasive species in Indiana, contact your regional specialist at the State of Indiana Cooperative Invasives Management (*https://sicim.info/assistance*).

Reference

Britton, J. S., R. T. Reber, P. E. Rothrock & R. Dunbar. 2014. Impacts of *Galerucella calmariensis* and *G. pusilla* on *Lythrum salicaria* in Indiana. Proceedings of the Indiana Academy of Science 123:23–34.

This article first appeared in the IndyStar (January 7, 2026). Sophie Hartley is an IndyStar environment reporter whose work receives the generous support of the nonprofit Nina Mason Pulliam Charitable Trust. You can reach her at sophie.hartley@indystar.com *or on* X *at* @sophienhartley.

*The IndyStar environmental reporting provided an excellent summary of the danger and control efforts relating to purple loosestrife. But for those of us who tuned into Paul Harvey's "The Rest of the Story" broadcasts (which aired from 1976 to 2009), there are points of regional interest to add. During the 1990s, our Indiana Northeast Regional Ecologist, Rich Dunbar, actively worked on the effort to test biocontrol insects. The research in which he was involved was the first time an invasive plant was targeted for biological control for non-agricultural reasons. Of the several insects tested, the leaf-feeding beetles (*Galerucella calmariensis *and* G. pusilla*) were particularly effective. As seen in Rich's Indiana-based research (Britton et al. 2014), the beetles reduced the density of purple loosestrife and its inflorescence production at his sites (see the graph below for one example). Most gratifying was that at most sites the number of wetland plant species increased over time. Of course, these biological control agents are not "silver-bullets." They do not eliminate the invasive species, but thanks to the persistence and gradual spread of the leaf-feeding beetles, the drifts of purple loosestrife are disappearing.*



R. Dunbar

@indiananativeplants.org

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To teach people about their beauty, diversity, and importance to our environment.

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Director	Ellen Jacquart	ellenjacquart@gmail.com
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Website/Communications	Wendy Ford	webmaster@indiananativeplants.org

State Program Leaders

Annual Conference 2026	Brooke Alford & Bobby Kimball	conference@indiananativeplants.org
Biodiversity Grants	Molly Baughman	grants@indiananativeplants.org
Conservation Advocacy	Brenten Reust	conservation@indiananativeplants.org
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Florathon	Barbara Homoya	florathon@indiananativeplants.org
Grow Indiana Natives	Heidi Gray	grow@indiananativeplants.org
IN Native Seed Communities	Bill Daniels	seed@indiananativeplants.org
INPS Journal	Scott Namestnik	journal@indiananativeplants.org
Journal Editor	Paul Rothrock	journal@indiananativeplants.org
Journal Layout	Sam Ransdell	journal@indiananativeplants.org
Journal Distribution Assistant	Amanda Woods	journal@indiananativeplants.org
Invasive Plant Education	Dawn Slack	invasives@indiananativeplants.org
Landscaping with Natives	Coralie Palmer	landscape@indiananativeplants.org
Plant Sale & Auction	Aimee Cooper	auction@indiananativeplants.org
Special Project/State Flower	Tom Hohman	hohmantr@aol.com
Youth Education	Michelle Kolar & Beth Kosiba	youth@indiananativeplants.org

Chapter Leaders

Central	Bobby Kimball	central@indiananativeplants.org
East Central	Aimee Cooper	eastcentral@indiananativeplants.org
North	Chris White	north@indiananativeplants.org
Northeast	Sean Nolan	northeast@indiananativeplants.org
South Central	Will Cowan	southcentral@indiananativeplants.org
Southwest	Misty Minar (interim)	southwest@indiananativeplants.org
West Central	George Kopcha	westcentral@indiananativeplants.org

Staff

Program Facilitator	Jill Casey	facilitator@indiananativeplants.org

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Biesecker — *continued from back page*

I told him that his prairie was an extremely rare type of plant community, as it was on clay-loam soils. It was so special that it had been studied by Dr. Bliss, a professor from the University of Illinois. I said that I had spent the last three years looking for prairies in Illinois, and those that remained were tiny prairies either on railroad rights-of-way or in back of old pioneer cemeteries. I asked if they would like to go look at the prairie and thankfully they agreed. As we walked through the prairie, they were impressed by the variety of prairie plants we encountered. By the end of the meeting, they had warmed up quite a bit. Back in their living room, Mrs. Watt served us all a slice of pie with vanilla ice cream. Mr. Watt told me about the prairie's history. His wife was a Biesecker and the prairie had been in her family for 50 years. It had never been plowed, but there had been some horse grazing, a circus, and some soil had been scraped on the west side when the US highway was widened. He said it frequently burned, with the fires being started from sparks as the train went by on the east side.

After that meeting, I stayed in periodic touch with them. Whenever I came by to visit the prairie, Mr. Watt would join me. He said he was showing the prairie plants to his grandchildren, and he was starting to paint them. I thought that was a good sign. In January 1979, I sent the Watts a copy of Torkel Korling's new book *The Prairie: Swell and Swale*, autographed by Dr. Robert Betz, a nationally recognized prairie expert. I told them Dr. Betz hoped to visit their prairie soon, and he would love to meet them. In July 1979, Dr. Betz gave Mr. Watt a grand tour of the prairie. He did his classic "Prairie Professor" thing, chasing and catching a regal fritillary butterfly (*Speyeria idalia*) in his handkerchief to show him. Dr. Betz pointed out a relative of prairie onion (*Allium* sp.) and told Mr. Watt the native Americans called them "chicagwa." Later that year, I sent Mr. Watt the January, 1980 issue of the *National Geographic* that featured prairies and contained a picture of Dr. Betz. The sure sign that Mr. Watt was getting hooked on prairies came when he attended the 1981 Northern Illinois Prairie Conference.

We actively started to pursue purchase of the prairie in 1986 when the family agreed to let us have the property appraised. We partnered with Bill Weeks, Director of The Nature Conservancy Indiana office. In 1988 he sent the Watts a proposal to acquire the property, and suggested ways to enable the sale while minimizing capital gains. Land values on US 41 north of US 231 were ranging from $25,000 to $75,000/acre. However, fortunately for us, and unfortunately for the Watts from a land value perspective, utilities from the nearby town of St. John did not extend south to the prairie. The prairie property was appraised at $9,000/acre. That made the value $270,000 and thus the most expensive nature preserve to date. The Watts agreed to sell. They were leaving for a trip to Alaska, so Bill and I drove to O'Hare Airport where we met them for signing of the documents.

It had been a long time since that first meeting. During that time, we had become friends with the Watt family, and they had grown to love the prairie. It was named after Mrs. Watt's family, and called Biesecker Prairie. Over the years, scientists, including Ron Panzer of Northeastern Illinois University (e.g., Panzer et al. 2010), have documented numerous prairie insects considered endangered and threatened. Of course, endangered and threatened plants also occur in the prairie as well as the panoply of species characteristic of our region's rich prairie ecosystems. Thanks to regular prescribed burns and removal of invasive woody species, this wonderful prairie continues to thrive. Biesecker Prairie was dedicated as a state nature preserve on August 19, 1992.

Given the rarity of the preserve, visitation is restricted and there is no parking lot or trail. The Division of Nature Preserves requests that those who wish to visit contact them for permission.

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John Bacone, a member of the Central Chapter of INPS and retired Director of the Division of Nature Preserves, has graced our Journal pages with a fascinating series of articles that documents the building of Indiana's nature preserve system.

Landscaping with Natives: Microforests

By Alexa Simpson

Microforests, also known as mini-forests or the Miyawaki tree planting method, are dense patches of native trees planted on once degraded land. This method is highly successful in producing biodiverse, ecologically resilient forest plantings (Webber 2026).

Created by Dr. Akira Miyawaki, a professor at Yokohama National University, the Miyawaki method emphasizes climax species that have a variety of different benefits due to the dense planting. Some of these include faster growth, self-sufficiency soon after planting, better filtration of water, and decreased erosion (SUGI 2026).

Courtesy of New Haven, Indiana Tree Commission

*The two-year old microforest planting in New Haven, Indiana included sycamore (*Platanus occidentalis*), tulip poplar (*Liriodendron tulipifera*), and rough dogwood (*Cornus drummondii*) on its species list.*

In practice, multiple plant species are installed, often at a density of 3 plants per m^2. The species include tree species that we think of as canopy trees as well as trees or shrubs that occupy the understory of a mature forest. Typically the soil needs an infusion of organic matter worked into the soil to a depth of 7" or more, and, once the planting is complete, mulch is applied. Irrigation is also important during the first two years and the addition of mycorrhizal fungi may aid the success of a microforest. Following this strategy, microforests have strong success rates. According to a study in the United Kingdom, microforests attained an average survival rate of 79%, as opposed to 47% in conventional monocultural plots (SUGI 2026).

One of the reasons why microforests have grown in popularity is their accessibility to the public. These forests can be exceptionally small, as little as a three square meter area with as few as seven trees (Pavlovic 2021), allowing for cost-effective planting by everyday citizens. Although originating in Japan and succeeding within the United Kingdom, efforts are truly being seen globally. Notably, in Scotland and the Netherlands, microforests are starting to be considered as valuable forms of conservation, where before they were dismissed as too small to be of value (Timperley 2025). As research shows the unappreciated benefits of microforestry, small urban areas have been targeted with planting efforts.

Since the Miyawaki method has proven successful in many different climates, it is not surprising that microforests can succeed in the Midwest. Our climate is generally conducive for the growth of hardwood tree species – oaks (*Quercus* spp.), hickories (*Carya* spp.), maples (*Acer* spp.), and many more. And because of our high summer heat and humidity and ever-changing climate, efforts of reforestation and specifically microforests are increasingly important due to the growing need for the shade provided by a tree canopy (Midwest Climate Collaborative 2026).

A project titled Renewing the Countryside (RTC) launched in St. Paul, Minnesota in 2024 near Pilgrim Baptist Church (Renewing the Countryside 2026). With over 80 volunteers, the success rate has resulted in the upcoming planting of even more microforests in Brooklyn Center, Minnesota and elementary schools in the area. Cincinnati, Ohio has seen growth in microforestry, particularly through an organization named Taking Root. Recently, this organization received a $30,000 grant from the Bell Charitable Foundation, and an additional $10,000 from the Cincinnati Parks Foundation to put towards the planting of four microforests within the next few years (Taking Root 2026). With members from Taking Root as well as community members from local garden centers, parks, and universities, the first plantings have taken place as of March 2026, and will continue to expand.

Indiana, too, has examples of microforest efforts, often by sustainability programs at universities. In April of 2026, Indiana University South Bend (IUSB) began a

multi-year project of planting a microforest, beginning with removing invasive trees and trash from the area (Instagram 2026). This patch of forest will be about two-thirds of an acre in area and located by student housing, a great opportunity to get students involved in the project. The accessibility of a dense patch of forest allows for a unique connection to nature for students, faculty, and visitors to the campus. Overall this project not only benefits the surrounding habitat, but also the mental health of those within the IUSB community due to the benefits provided by green spaces (Weir 2020).

New Haven, Indiana, has led a particularly successful reforestation effort using the Miyawaki method that started in 2021. Since then, additional sites were added in 2022 and 2023 as part of the New Haven Miyawaki Reforestation Project (WANE 15 News 2023). In total, over 2700 native trees have been planted, with leaders of the project aiming to promote the benefit of trees and to provide education regarding overlooked ecological concepts.

Surprisingly, the Miyawaki method started in Indiana as early as 2014 by Dr. Miyawaki himself on previous industrial sites (Planet Tools 2026). He inspired the work of Arvin Sango, who planted six microforests between 2013 and 2018 in Madison, Indiana, a masterpiece of self-sustaining, flourishing ecosystems. Although Dr. Miyawaki passed away in 2021, his legacy lives on in the Hoosier landscape, and his work will inspire future projects using his method, in small Indiana towns and worldwide.

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Alexa Simpson is a rising senior biology major at Butler University. She has worked at the Friesner Herbarium since her sophomore year, where she has done notable work refreshing the Butler Tree Walk.

INPS at work!

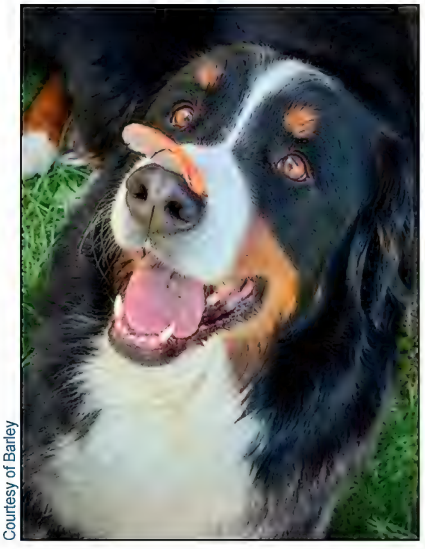
Courtesy Aimee Cooper

The East Central Chapter of INPS, with new leadership under Aimee Cooper, held a successful winter seed sowing event with 29 participants. Plans were also laid out for a seed swap and other springtime activities.

Samaras: A Canine Perspective

By Barley Coopersmith

Woof! … woof, woof! Barley here. I just returned from an exciting walk with my pet, Karin. She occasionally takes me to Cascade Park, a really cool place. It has grassy areas with scattered trees, a rocky bottom stream where I can get wet on a hot day, and a wooded slope that includes a little waterfall.



Courtesy of Barley

My big surprise today was to watch tiny helicopters fluttering down from different trees. One even tried to land on my nose. It soon turned into a fun game!

I encouraged my pet to gather samples of the helicopters and show them to my botany friend, Eric. He called them samaras or winged-achenes. He explained that they are one-seeded indehiscent fruits. Initially I thought he said that they were indecent, but Eric explained that indehiscent means that these fruits do not split open to release the enclosed seed. He provided Karin and me with a whole bunch of technical details that I found boring, except for the fact that the aerodynamic wings provide lift that allows the fruits to drift further from the parent tree.

In Cascade Park, Karin and I found samaras on maple (*Acer* spp.), ash (*Fraxinus* spp.), and elm (*Ulmus* spp.). Nearby we also spotted them on wafer ash (*Ptelea trifoliata*).

For a puppy like myself, the most important question is can samaras be a new toy or an edible treat? Of course, I had fun trying to catch them in my mouth, my mini-frisbee game. The whirligigs from maples were the most fun to try to catch. The trickiest were from elm since they were small and fluttered due to having the seed near the center rather than at the end of the wing.

As for treats, another of my many friends, Cedar, said that when she lived in Alaska, she would roast maple samaras as little treats. That I would like to try!

We took pictures of all the different samaras that we could find. Eric identified each species. Karin thought you might like to test your knowledge. And I say woof, woof-woof … "bone journée!"

Barley is a six-year old Bernese Mountain Dog who resides with his pet human in Bloomington, Indiana.

— *Save the Date!* —

INPS Annual Conference

October 17 at the IMMI Conference Center in Westfield

Answers:

1. *Box elder (Acer negundo)*
2. *Sugar maple (Acer saccharum)*
3. *Wafer ash (Ptelea trifoliata)*
4. *Red maple (Acer rubrum)*
5. *White ash (Fraxinus americana)*
6. *American elm (Ulmus americana)*
7. *Silver maple (Acer saccharinum)*
8. *Green ash (Fraxinus pennsyvanica)*
9. *Slippery elm (Ulmus rubra)*

All photos by Paul Rothrock

Botany 101: The Hair-Raising World of Plant Trichomes

By Paul Rothrock

Few people pull their hair out contemplating plant trichomes, aka plant hair. After all, how important can they be given that some plants have bald stems and leaves, and are said to be "glabrous." Nevertheless the sheer variety of plant hairdos suggests there must be more to their story. So, don't wig out, but read on!

P. Rothrock

The coating of glandular hairs on the calyx of royal catchfly is so dense that, as the common name suggests, it can capture and immobilize flying insects.

Plant hair has an impressive vocabulary due to the wide variety of forms it takes. The hairs can be dense or sparse, thick or thin, stiff or soft, long or short, one-celled or multi-celled, branched or not, glandular or not, and with a range of chemical composition to their cell-wall and contents. These engender a range of descriptive terms such as pilose, hispid, tomentose, velutinous, puberulent, strigose, and more. Frequently these differences in plant hairs or pubescence aid the taxonomist in distinguishing one species from another. For example, one helpful way to distinguish a white oak leaf (*Quercus alba*) from a bur oak leaf (*Q. macrocarpa*) is to examine the lower epidermis. The former is glabrous, while bur oak will have a dense tomentum (excuse the redundancy) of branched hairs. And then there is the incredibly complex group called witch grass (*Dichanthelium* spp.), just ask our Indiana State Botanist Scott Namestnik about species whose primary differences focus on the types and abundance of hairs.

P. Rothrock

The hairy flower buds of magnolia and other woody species may aid in maintaining slightly warmer temperatures inside the large bud.

Given the broad range of conditions, it should not surprise that the functions of plant hairs may vary too. In many cases one can easily determine that trichomes aid in the plant's defense against herbivores and pathogens. Among Indiana native plants a champion at defense is wood nettle (*Laportea canadensis*). The trichomes in this species are stiff and sharply pointed. In my experience, even denim jeans do not prevent the stinging hairs from penetrating through to the skin. To add to the physical pain and the injury they cause the skin, the broken hair injects a chemical cocktail into the wound. These irritating chemicals include formic acid, histamine, and acetylcholine. By the way, while you may not wish to grow this plant near your home, it does serve critical ecological functions. In our moist woodlands it acts as host plant for comma (*Polygonia comma*), question mark (*P. interrogationis*), and red admiral (*Vanessa atalanta*) butterflies as well as moths (*Bomolocha edicatalis* and *B. sordidula*) (Illinois Wildflowers 2025).

Glandular hairs, which appear on as many as 30% of vascular plant species, are an important source of essential oils i.e., natural fragrances, that may repel grazers. One native wildflower of the pink family (Caryophyllaceae), however, has so many glandular hairs that they make the surface sticky. It is aptly known as royal catchfly (*Silene regia*). These hairs may stop insects trying to climb up the stem toward the flower. Even a bee can get completely stuck, which makes one wonder whether this plant has any carnivorous qualities. While the flypaper habit might be a step toward carnivory of the sort exhibited by sundews (*Drosera* spp.), royal catchfly seems to lack both a mechanism for attracting insects as well as the enzymes for digesting them (Redmond 2023).

Of course, even less sharp and non-glandular hairs play important roles in the life of a plant. In the agricultural world, hairs on soybeans (*Glycine max*) prove useful in repelling lepidopteran herbivores (Hulbert et al. 2004). In another fascinating study of a Florida shrub, buttonwood (*Conocarpus erectus*), hairy or pubescent individuals were more prevalent in settings with more herbivory by foliar arthropods (Schoener 1987).

The majority of studies, however, examine more subtle functions for well-coffed plants, functions relating to light and UV radiation and managing moisture and leaf temperature. Consider a plant with dense pubescence. A mat of hair can increase leaf reflectance by as much as 40% and even average hairiness can alter reflectance by 9% (Bickford 2016). And it turns out that pubescent plants are indeed

more frequent in environments with more solar radiation and higher maximum temperatures. Among our Indiana species, rabbit-tobacco (*Pseudognaphalium obtusifolium*) likely relies upon its pubescence to adapt it to a full-sun environment and the low water availability provided by gravelly or sandy substrates. The increased reflectance aids the plant in keeping the plant cool even when water supply is inadequate. Probably even more important is the potential ability to prevent photoinhibition of photosynthesis caused by intense sunlight. While there are additional biochemical responses, such as the xanthophyll cycle, that combat photoinhibition, so too does the reflectivity of trichomes.

In some species, the protection of pubescence varies with the stage of leaf development. Early in the life of a leaf, hairiness may be important in providing protection from UV light. Some of our willows, such as beaked willow (*Salix bebbiana*), have hairy young leaves that soon turn nearly bald, much like my son-in-law after age 25. With maturity, the willow leaves have toughened sufficiently to withstand the intense light as well as thermal stress on their photosynthetic output.

Another leaf attribute that varies with the abundance of hairs is the wettability of the leaf surface (Bickford 2016). This adaptation may be rather complex. Some suggest that hairs may increase water use efficiency of a leaf by promoting condensation, i.e., by gathering dew water (Konrad et al. 2015). On the other hand, dense hairs may reduce wettability, which prevents water from coating the epidermis. This can prevent water from occluding the gas pores on the leaf surface and can slow the spread and growth of pathogens.

Ever more intriguing roles for trichomes may be imagined. Do the hairy flower buds, as seen on magnolia (*Magnolia* spp.), keep the interior warmer (some research says yes!)? Maybe all my fuss over plant hair is unwarranted. But no, I think the answer lies with an observation by African-American songwriter Alicia Keys: "Hair is such a gorgeous expression of our individuality, it deserves to be respected." Can one say any less about plants and their many and varied hairdos?

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Paul Rothrock, a member of the South Central Chapter of INPS, became obsessed with plant hairs while curating the Indiana University Herbarium. Those of the genus Desmodium *were particularly diabolical.*

P. Rothrock

*The stiff trichomes of lance-leaf ragweed (*Ambrosia bidentata*) likely serve as a feeding deterrent to herbivorous arthropods.*

P. Rothrock

The stinging hairs of wood-nettle, while an important protective adaptation, can keep humans from enjoying a walk in moist Indiana woodlands.

Bill Thomas

The tomentose stems and lower leaf surfaces of rabbit-tobacco increases reflectivity and adapts this species to dry habitats with intense sunlight.

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The Protection of a Significant Prairie Remnant: Biesecker Prairie

P. Rothrock

Graduate student Daryn Dockter participated in a project that sampled the structure of the plant community at Biesecker Prairie. Biesecker Prairie was full of superlatives: in mid-summer one could enumerate over 60 native species in a sample area and an average of over 12 species in subplots that measured 50 × 50 cm. By contrast, restored prairies, sampled in the same manner, never had more than 40 species in the sample area with an average of fewer than 9 per subplot.

By John A. Bacone

Biesecker Prairie, a 31-acre prairie remnant located near Crown Point, Indiana, had been a priority of the Division of Nature Preserves since 1969. At that time, the pre-eminent Chicago botanist Floyd Swink had alerted Bill Barnes, the Division Director, about the natural significance of the property. We had further knowledge of the property thanks to a recent scientific paper (Bliss & Cox 1964). Most importantly, the prairie was a surprisingly large remnant for the Great Lakes region, plus it occurred atypically on timber soil (known as alfisol) not on typical prairie soil (mollisol). It probably was an oak savanna in pre-settlement times – the historic General Land Office Survey listed bur oaks (*Quercus macrocarpa*) as witness trees. Given all these knowns, the Division of Nature Preserves was certainly interested in the future of this prairie!

Mrs. Dorothy Pritchard, from the Lake County Soil and Water Conservation District, alerted me in a letter dated May 1, 1978, that the tract we knew as the "Cook Prairie," a name given to it by Floyd Swink, was under threat to be developed. Others, who were aware of the prairie remnant, had been calling it the "St. John Prairie," or the "Vicki I Love You Prairie," so named for the message scrawled on the nearby railroad bridge that went over US 231 nearby. Mrs. Pritchard told me it was owned by Mr. and Mrs. James Watt, who lived near the prairie. She gave me their contact information and urged me to get in touch with them soon. She had heard that the family already had a potential buyer for 10 acres of this land – someone who wanted to build a restaurant.

I called up Mr. Watt and asked him if he would be willing to meet. He agreed, and I drove up from Indianapolis and met him at his property. It turned out he lived immediately north of the prairie. His house faced south and overlooked the prairie, which was about ¼ mile distant. As I pulled into his driveway, he and his son were sitting on the front of his car, with their arms folded across their chests. The first words out of his mouth were "What the hell good is a goddamn prairie anyway?"

Biesecker — continued on page 9